STATE OF NEW MEXICO
BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD

IN THE MATTER OF PROPOSED REVISIONS TO THE STATE IMPLEMENTATION PLAN FOR REGIONAL HAZE **No. EIB 11-01 (R)**

NMED EXHIBIT 18
NMED Responses to U.S. Forest Service Comments
May 20, 2011

NMED's responses to the comments submitted by the U.S. Forest Service under a cover letter dated March 30, 2011 are presented below. The comments are appended herein, followed by NMED's responses (indented and labled).

General Comment

Bernalillo County is treated as a separate jurisdiction for air quality regulations by New Mexico State statute; hence this SIP draft only applies to the State of New Mexico excluding Bernalillo County. All of the WRAP technical support system (TSS) inventories, graphics and tables, however, treat New Mexico as a single entity which includes Bernalillo County. As a result, it is not possible to determine if the portion of New Mexico affected by this SIP is meeting the requirements of 51.308. Chapters 1-3, 5, and 8-12 should discuss the impact of the separation of Bernalillo County from the rest of the State on each requirement of 51.308 (e.g. New Mexico's demonstration of its share emission reductions). Special attention needs to be given to separating Bernalillo County impacts at Class I areas from those of the rest of the State. Coordination between NMED and Bernalillo County as was done with other States would also be appropriate if not specifically required under the rule.

> **Response to General Comment:**
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> Tables 8-1 through 8-8 have been revised to show total New Mexico emissions, and New Mexico emissions excluding Bernalillo County emissions. Bernalillo County has developed a State Implementation Plan for their portion of the New Mexico emissions. NMED has coordinated closely with Bernalillo County on SIP development under Section 309.

Chapter 9: Visibility Modeling and Source Apportionment

Under 40 CFR 51.308(d)(3)(iii), a state must document the technical basis it is relying upon to meet its reasonable progress goals. Chapter 8 of the document provides a brief summary of the WRAP TSS and emission inventory data. Chapter 9 of the document describes the air quality modeling source apportionment techniques relied upon to help inform strategy development. However, Chapter 9 does not provide a detailed discussion of the either the Particle Source

Apportionment Technique (PSAT) or the Weighted Emissions Potential (WEP) processes, which are crucial to understanding the utility of the various assessment methodologies the state relies upon to set its reasonable progress goals. WEP and PSAT use different emission inventories which should be clarified to aid the interpretation of visibility projections. Additional information regarding the methodologies should be included in this chapter.

Additionally, chapter 9 does not provide performance evaluations of either prognostic meteorological model data or the base case results from the WRAP Base02d inventory used in the regional air quality models, CMAQ or CAMx. Without an understanding of model performance, we cannot conclude that the state's model is reasonably reliable nor understand inherent model nuances that can aid in our understanding of the model results.

The following changes in projections between the baseline and future years should be examined and explained by New Mexico:

- Table 9-2 (Bandelier): N03 increases from 2.51 Mm^{-1} (2000-2004) to 2.53 Mm^{-1} (2018). SOIL increases from 1.12 Mm^{-1} (2000-2004) to 1.43 Mm^{-1} (2018). CM increases from 2.93 Mm^{-1} (2000-2004) to 3.64 Mm^{-1} (2064).
- Table 9-4 (Carlsbad Caverns): N03 increases from 3.81 Mm^{-1} (2000-2004) to 4.27 Mm^{-1} (2018). OC increases from 6.73 Mm^{-1} (2000-2004) to 6.88 Mm^{-1} (2018). SOIL increases from 4.37 Mm^{-1} (2000-2004) to 5.26 Mm^{-1} (2018).
- Table 9-5 (Gila): OC increases from 16 Mm^{-1} (2000-2004) to 23.26 Mm^{-1} (2018). EC increases from 3.17 Mm^{-1} (2000-2004) to 5.7 Mm^{-1} (2018). SOIL increases from 1.45 Mm^{-1} (2000-2004) to 2.14 Mm^{-1} (2018).
- Table 9-6 (Wheeler Peak): SOIL increases from 1.75 Mm^{-1} (2000-2004) to 2.0 Mm^{-1} (2018). CM increases from 2.77 Mm^{-1} (2000-2004) to 3.21 Mm^{-1} (2064).
- Table 9-7 (Salt Creek): SOIL increases 3.34 Mm^{-1} (2000-2004) to 3.44 Mm^{-1} (2018).
- Table 9-8 (San Pedro): SOIL increases 1.47 Mm^{-1} (2000-2004) to 1.68 Mm^{-1} (2018).
- Table 9-9 (White Mountain): SOIL increases from 1.89 Mm^{-1} (2000-2004) to 2.02 Mm^{-1} (2018).

In addition, the disproportionate impact of S04 across the state (i.e. between northern and southern Class I areas) is not clearly explained in Chapter 9 especially since IMPROVE monitors in New Mexico show an increase in S04 across the state since the 2000-2004 baseline period.

Response to Comments on Chapter 9:

Information on WRAP modeling and emissions is included in Appendices A and B as well as summarized in Chapter 9. In addition, information on all of the WRAP modeling protocols including model performance was vetted thoroughly through the WRAP including with Federal Land Managers. Information on this is provided at the WRAP Regional Modeling Center website at http://pah.cert.ucr.edu/aqm/308/index.shtml. Section 9.3 describes emissions changes in more detail. San Pedro Parks is not included in the 309(g) SIP. Emissions data in Tables 8-1 through 8-8 show that emissions in general are decreasing, except from area sources, road dust and fugitive dust.

Section 2.3 describes the likely error in over predicting area source emissions for 2018.

Chapter 11: Reasonable Progress Goal Demonstration

The Regional Haze Rule requires States to demonstrate reasonable progress in visibility improvement by 2018 for the 20% worst days and to protect visibility on the 20% best days. In mandatory Class I areas in New Mexico, the plan goals do not meet the uniform rate of progress (URP) in improving visibility on the 20% worst days by 2018 as mandated in 40 CFR 51.308(d)(1):

> *What are the core requirements for the implementation plan for regional haze? The State must address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State. To meet the core requirements for regional haze for these areas, the State must submit an implementation plan containing the following plan elements and supporting documentation for all required analyses:*
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> > *(1) Reasonable progress goals. For each mandatory Class I Federal area located within the State, the State must establish goals (expressed in deciviews) that provide for reasonable progress towards achieving natural visibility conditions. The reasonable progress goals must provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the least impaired days over the same period.*

The proposed goals in Chapter 11 allow for incremental increases in anthropogenic emissions at several NM Class I areas (Bandelier and Carlsbad), and also allow for degradation in the most impaired days at Gila, and degradation in the least impaired days at Gila and Carlsbad. This, again, is contrary to 40 CFR 51.308(d)(1). While New Mexico asserts that many of the emissions are outside of their control, originating from natural fire and/or extra-regional emissions, the inventory and modeling documentation does not categorically support these conclusions. In a number of cases cited below, both the WEP and PSAT analyses show increases in NM anthropogenic emissions at a number of NM Class I areas.

1. Section 11.3.1 - Bandelier National Monument: PSAT results for SO_4 and NO_3 (Figure 9-10 and 9-12) show a significant increase in the NM area category.
2. Section 11.3.2 - Bosque del Apache Wildlife Refuge: PSAT results for SO_4 and NO_3 (Figure 9-14 and 9-16) also show a significant increase in the NM area category over the baseline period.
3. Section 11.3.3 - Carlsbad Caverns National Park: PSAT results for NO_3 (Figure 9-20) show an incremental increase in the NM area category over the baseline period.
4. Section 11.3.4 - Gila Wilderness: The documentation does not support the conjecture that OC from wildfire would account for a 45% increase in 2018 in the extinction budget over baseline conditions. Table 8-4 shows that the tonnage of OC from natural fire (16,256 tpy) remained constant between the Prp18b and Plan02d inventories. OC tonnages dropped by 35% for the anthropogenic fire category for the corresponding period.

Likewise, the WEP analysis presented in Figure 9-61 depicts the same, showing a decrease in anthropogenic fire and level emissions in natural fire between the Prp18b and Plan02d inventories. Finally, we examined CMAQ modeling results for OC (available from the WRAP TSS) for neighboring Class I areas such as Chiricahua, Mount Baldy, and Bosque del Apache and found no corresponding changes in OC impacts. Large increases of OC in the northern Mexican states would have a much more widespread impact than a single Class I area and would likely have been noted at these other Class I areas. Since natural fire remains constant and anthropogenic fire decreases significantly between Plan02d and Prp18b and the impact of Mexican emissions would be more widespread, we do not believe that the reasonable progress goal for the Gila Wilderness can be justified under 40 CFR 51.308(d)(I).

5. Section 11.3.5 - Wheeler Peak/Pecos Wilderness Areas: PSAT results for NO_3 show a significant increase in NO_3 impacts from NM area sources (Figure 9-28).

As mentioned in our comments on Chapter 10, we believe the source list is incomplete in Section 11.2.2. Chapter 10 discusses a minimum of 10 sources that were exempted from the BART analysis phase of the SIP development. These sources should also be considered in the four factor analysis for reasonable progress.

Response to Comments on Chapter 11:

As mentioned in the Response to Comments on Chapter 9, area source, road dust and fugitive dust emissions are projected to increase. Section 2.3 describes the over prediction of area sources. Corrections to the data have resulted in the showing of improvement at Gila Wilderness on the best and worst days. Section 11.2.2 describes sources that were evaluated for the four factor analysis. BART-eligible sources were screened for impacts to Class I areas. The only source with over 0.5 deciview impairment at any Class I area was San Juan Generating Station. New Mexico prepared a BART determination for that source.

Chapter 12: Long Term Strategy

Section 12.2 discusses the contribution of New Mexico to neighboring states' Class I areas. However, we do not believe this discussion addresses the requirements as specified under 40 CFR 51.308(d)(3)(i-ii):

(3) Long-term strategy for regional haze. Each State listed in § 51. 300(b)(3) must submit a long-term strategy that addresses regional haze visibility impairment for each mandatory Class I Federal area within the State and for each mandatory Class I Federal area located outside the State which may be affected by emissions from the State. The long-term strategy must include enforceable emissions limitations, compliance schedules, and other measures as necessary to achieve the reasonable progress goals established by States having mandatory Class I Federal areas. In establishing its long-term strategy for regional haze, the State must meet the following requirements:

(i) Where the State has emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I Federal area located in another State or States, the State must consult with the other States) in order to develop coordinated emission management strategies. The State must consult with any other State having emissions that are reasonably anticipated to contribute to visibility impairment in any mandatory Class I Federal area within the State.

(ii) Where other States cause or contribute to impairment in a mandatory Class I Federal area, the State must demonstrate that it has included in its implementation plan all measures necessary to obtain its share of the emission reductions needed to meet the progress goal for the area. If the State has participated in a regional planning process, the State must ensure it has included all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process.

First, the State must demonstrate that it has included all measures necessary to get its share of the emissions reductions needed to meet the progress goal for the area. The discussion in Section 12.2 is presented in terms of the state level contribution for aggregate visibility for all Class I areas within a given state. This approach does not address the specific requirement of 51.308(d)(ii) to examine the efficacy of a state's emission reduction measures to help meet the progress goal of the area, which can only addressed by examination of the reasonable progress of specific Class I areas. Second, we do not believe that the New Mexico's emission reduction measures are sufficient to meet this requirement given that incremental increases at a number of NM Class I areas attributed to increases in NM area sources as documented in the PSAT analysis results from Chapter 9.

With Section 12.7.15, the Forest Service has routinely commented that States not include an SMP as an Appendix because it might require a SIP revision in the event that the SMP is modified.

Response to Comments on Chapter 12:

Chapter 12 has been revised to show New Mexico's impact on specific Class I areas where New Mexico has a greater than 5 percent impact to visibility impairment. The SMP is a part of the 309 SIP, not a part of the 309(g) SIP. It has already been submitted to EPA as part of our 2003 SIP submittal.